INDEX

A

Absorption of phosphate, 337
Actinia tenebrosa, 178
ADAMS, MICHAEL A., see Richard A. Gleeson, 1
Age effects on reproduction, 161
Aiptasia pulchella, 246
Albumin, 269
Algal symbiosis, 46
Allen symposium, 267
Allometry of deposit feeding in *Capitella* species I (Polychaeta: Capitellidae): The role of temperature and pellet weight in the control of egestion, The, 187
Allometry, 30, 187
Alpheid shrimps, 350
Amino acid, 269
Amino acid sequences, 269
Amphidinium carteri, 128
Amphidinium klebsi, 128
Amphipod, 155
ANDERSON, DONALD M., AND PHILLIP S. LOBEL, The continuing enigma of ciguatera, 89
ANDERSON, ROBERT S., Polykaryon formation by *Mercenaria mercenaria* hemocytes, 236
Androgenic gland, 1
Annelida, 315
Anthopleura asiatica, 202
Anthozoan, 161
Application of an improved method of two-dimensional electrophoresis to the systematic study of horseshoe crabs, 212
Assessment of a rapid enzyme immunoassay stick test for the detection of ciguatoxin and related polyether toxins in fish tissues, 144
Asteria forbesi, 357
AYRE, DAVID J., The formation of clonal territories in experimental populations of the sea anemone *Actina tenebrosa,* 178

B

BAGNIS, R., M. BARSINAS, C. PRIEUR, A. POMPON, E. CHUNGUE, AND A. M. LEGRAND, The use of the mosquito bioassay for determining the toxicity to man of ciguateric fish, 137
Barnacle, 284
BARSINAS, M., see R. Bagnis, 137
Behavior, 307
Behavioral recovery, 83
Benthic dinoflagellates, 89
Bioassay methods, 89
Blood-sucking snail: the Cooper's nutmeg, *Cancellaria cooperi* GABB, parasitizes the California electric ray, *Torpedo Californica* AYRES, A, 362
Blue crab, 1, 69
Body plan of the cyphonautes larva of bryozoans prevents high clearance rates: comparison with the pluteus and a growth model, The, 30
BOROWSKY, BETTY, The effects of embryos of different developmental stages on reproductive behavior and physiology in brooding females of the amphipod crustacean *Gammarus palustris,* 155
Brain repair, 83
Breeding systems, 161
Broods, 155
Bryozoa, 30
Burrowing barnacle, 284

C

Cancellaria cooperi parasitizes electric rays, 362
Clypeaster subdepressus, 324
CNS lesions, 83
CTX in fish tissues, 144
California electric ray, 362
Callinectes sapidus, 1, 69
Cancellaria cooperi GABB, 362
Capitella species I, 187
Centennial calendar, 265
Central nervous system, 1
Cestode, 337
Chemical stimulation, 10
Chemoreception, 10
Chlorella, 46
CHORNESKY, ELIZABETH A., AND ESTHER C. PETERS, Sexual reproduction and colony growth in the scleractinian coral *Porites astreoides,* 161
CHUNGUE, E., see R. Bagnis, 137
Ciguatera, 108, 122, 137
Ciguatera fish, 132
Ciguatera fish poisoning, 89
Ciguatera Workshop, papers, 89–153
Ciguateric risk to man, evaluation using mosquito bioassay, 137
Ciguatoxin, 89
Ciguatoxin and maitotoxin on muscle, 132
Ciguatoxin detection, 144
Ciguatoxin molecular structure, 122
Ciguatoxin structure, 122
Cirriped, 284
Cladistic analysis, 212
Clams, 236
Claw transformation, 350
Clonal territories, 178
Clones in *Anthopleura asiatica* populations, 202
Clypeaster rosaceus, 324
Clypeasteroida, 324
Cnidarian, 161
Coelomic fluid, 357

Colonial animal, 161
Continuing enigma of ciguatera, The, 89
Coolia monotis, 128
Cooper's nutmeg, 362
Copper, 69
Coral reefs, 89
Coral reproduction and growth, 161
Crustacea, 1, 10
Crustacean chemical perception: towards a theory on optimal chemoreception, 10
Cyphonautes, 30
Cyprid, 284

D

Decapod, 225
Deposit feeding, 187
Deuterostome-like nephridium in the mitraria larva of *Owenia fusiformis* (Polychaeta, Annelida), A, 315
DINEEN, JOSEPH F., JR., The larval stages of *Lithotrya dorsalis* (Ellis & Solander, 1786): a burrowing thoracican barnacle, 284
Dinoflagellates, 89
DOOLITTLE, RUSSELL F., The evolution of the vertebrate plasma proteins, 269
DUGAN, JENNIFER, see A. M. Wenner, 225
DURAND-CLEMENT, M., Study of production and toxicity of cultured *Gambierdiscus toxicus,* 108

E

Ecdysiotropic activity of juvenile hormone, 299
Ecdysone induced molting in shrimps, 350
Ecdysteroids, 350
Echinoides, 324
Effects of embryos of different developmental stages on reproductive behavior and physiology in brooding females of the amphipod crustacean *Gammarus palustris,* The, 155
Egestion rate, 187
Egg production, 225
Egg production by sand crabs (*Emerita analoga*) as a function of size and year class (Decapoda, Hippidae), 225
Emerita analoga, 225
ENGEL, DAVID W., Metal regulation and molting in the blue crab, *Callinectes sapidus:* copper, zinc, and metallothionein, 69
Enzyme immunoassay for CTX and related polyethers, 144
Epiphytes, 89
Evolution of the vertebrate plasma proteins, The, 269
Excretion, 315
Exocytosis, 246
Exocytosis of algae, 246
Exogenous 20-hydroxyecdysone, 350
Eyestalk hormone, 1

F

Feeding activities of two species of *Clypeaster* (Echinoids, Clypeasteroida): Further evidence of clypeasteroid resource partitioning, 324
Feeding allometry in *Capitella,* 187
Feeding of *Clypeaster* species, 324
Feeding, 10
Fibrinogen, 269
Filter feeding, 30
Fish poison, 122
Fish poisoning, 89
Flow, 61
Flow-assisted mantle cavity refilling in jetting squid, 61
Foraging, 10
FORBES, THOMAS L., AND GLENN R. LOPEZ, The allometry of deposit feeding in *Capitella* species I (Polychaeta: Capitellidae): the role of temperature and pellet weight in the control of egestion, 187
Formation of clonal territories in experimental populations of the sea anemone *Actinia tenebrosa,* 178
FUJII, HARUHIKO, The predominance of clones in populations of the sea anemone *Anthopleura asiatica* (Uchida), 202

G

Gambierdiscus toxicus, 89–153
Gamete dialogue in fertilization: from sea urchin to human, 265
Gammarus broods' effects on behavior, 155
GARDINER, STEPHEN L., see Peter R. Smith, 315
Gastropod, 83
Giant cells, 236
GLEESON, RICHARD A., MICHAEL A. ADAMS, AND AMOS B. SMITH, III, Hormonal modulation of pheromone-mediated behavior in a crustacean, 1
GOTO, C. S., see Y. Hokama, 144
GREER, ELIZABETH, see DeForest Mellon Jr., 350
Growth model, 30

H

HAROLD, ANTONY S., see Malcolm Telford, 324
Hemocytes, 236
Hemolysin-1, 128
Hemolysin-2, 128
Hermaphrodite, 161
Hippidae, 225
HIRABAYASHI, TAMIO, see J-I. Miyazaki, 212
HOKAMA, Y., L. K. SHIRAI, L. M. IWAMOTO, M. N. KOBAYASHI, C. S. GOTO, AND L. K. NAKAGAWA, Assessment of a rapid enzyme immunoassay stick test for the detection of ciguatoxin and related polyether toxins in fish tissues, 144

Hormonal modulation of pheromone-mediated behavior in a crustacean, 1
Hormone, juvenile, 299
Horseshoe crab, 212
HUBBARD, DAVID M., see A. M. Wenner, 225
HUBER, M. E., see J. B. O'Sullivan, 362
Hydra viridissima, 46
20-hydroxyecdysone, exogenous, 350
Hymenolepis diminuta, 337

I

Immobilization of *Nucella,* 307
Immobilization of the predatory gastropod, *Nucella lapillus,* by its prey, *Mytilus edulis,* 307
Induction of precocious molting and claw transformation in alpheid shrimps by exogenous 20-hydroxyecdysone, 350
Inflammation, 236
Invertebrate, 315
Ion channel, 132
IP, Y. K., see A. L. L. Lim, 337
IWAMOTO, L. M., see Y. Hokama, 144

J

JELLISON, KERRY, see A. M. Wenner, 225
JOH, YONG-GOE, see Kazuo Tachibana, 122
Juvenile hormone, 299

K

KOBAYASHI, M. N., see Y. Hokama, 144

L

Lamprey, 269
Larva, 30, 315
Larval description, 284
Larval stages of *Lithotrya dorsalis,* 284
Larval stages of *Lithotrya dorsalis* (Ellis & Solander, 1786): a burrowing thoracican barnacle, 284
LEGRAND, A. M., see R. Bagnis, 137
LIM, A. L. L., AND Y. K. IP, Membrane transport of phosphate by *Hymenolepis diminuta,* 337
LOBEL, PHILLIP S., see Donald M. Anderson, 89
Lobster, 10
Locomotion, 61, 83
Loligo, 61
LOPEZ, GLENN R., see Thomas L. Forbes, 187
Low feeding capability of cyphonautes, 30
Low temperature evokes rapid exocytosis of symbiotic algae by a sea anemone, 246

M

Macroalgae, 89
Maitotoxin, 89, 128, 132
Manduca sexta, 299
Mantle cavity refilling in squid, 61
MARCUM, JAMES A., A trypsin inhibitor from the coelomic fluid of the sea star *Asterias forbesi,* 357
Marine biotoxins, 137
Marine invertebrates, 307
MCCONNAUGHEY, R. R., see J. B. O'Sullivan, 362
MCEDWARD, LARRY R., AND RICHARD R. STRATHMANN, The body plan of the cyphonautes larva of bryozoans prevents high clearance rates: comparison with the pluteus and a growth model, 30
MELLON, DEFOREST, JR., AND ELIZABETH GREER, Induction of precocious molting and claw transformation in alpheid shrimps by exogenous 20-hydroxyecdysone, 350
Membrane transport of phosphate by *Hymenolepis diminuta,* 337
Mercenaria mercenaria, 236
Metal regulation and molting in the blue crab, *Callinectes sapidus:* copper, zinc, and metallothionein, 69
Metallothionein, 69
Mixture suppression, 10
MIYAZAKI, JUN-ICHI, KOICHI SEKIGUCHI, AND TAMIO HIRABAYASHI, Application of an improved method of two-dimensional electrophoresis to the systematic study of horseshoe crabs, 212
Modal analysis, 225
MOFFETT, STACIA, see Keith Snyder, 83
Mollusca, 61
Molting and metallothionein, 69
Monroy symposium, 265
MOOI, RICH, see Malcolm Telford, 324
Moray eel, 122
Mosquito bioassay, 137
MULLER-PARKER, G., AND R. L. PARDY, Response of green hydra to feeding and starvation at four irradiances, 46
Multinucleated giant cells in bivalves, 236
MURAKAMI, YASUTAKA, see T. Yasumoto, 128
MURATA, MICHIO, see T. Yasumoto, 128
MUSCATINE, L., see L. Grant Steen, 246
Mytilus edulis, 307

N

NAKAGAWA, L. K., see Y. Hokama, 144
Nauplii, 284
Nephridium, 315
Nephridium of the mitraria larva, 315
Neural regeneration, 83
Nucella lapillus, 307
NUKINA, MANABU, see Kazuo Tachibana, 122

O

O'SULLIVAN, R. R. MCCONNAUGHEY, AND M. E. HUBER, A blood-sucking snail: the Cooper's nutmeg, *Cancellaria cooperi* GABB, parasit-

izes the California electric ray, *Torpedo californica* AYRES, 362
Odor perception, 10
OHIZUMI, YASUSHI, Pharmacological actions of the marine toxins ciguatoxin and maitotoxin isolated from poisonous fish, 132
Optical approaches to the dynamics of cellular motility, 267
Optimal chemoreception, 10
Optimal foraging, 10
Ostreopsis ovata, 128
Ostreopsis siamensis, 128

P

PL toxin-1, 128
PL toxin-2, 128
Panulirus, 10
PARDY, R. L., see G. Mulier-Parker, 46
PETERS, ESTHER C., see Elizabeth A. Chornesky, 161
PETRAITIS, PETER S., Immobilization of the predatory gastropod, *Nucella lapillus,* by its prey, *Mytilus edulis,* 307
Pharmacological actions of the marine toxins ciguatoxin and maitotoxin isolated from poisonous fish, 132
Phenetic analysis, 212
Pheromone, 1
Phosphate, 337
Phosphate transport, 337
Phosphate uptake, 337
Phylogeny, 212
Plasma proteins, 269
Pluteus, 30
Podia, food collecting, 324
Polychaeta, 187, 315
Polykaryon formation by *Mercenaria mercenaria* hemocytes, 236
POMPON, A., see R. Bagnis, 137
Porites astreoides Lamarck, 161
Precocious molting, 350
Predominance of clones in populations of the sea anemone *Anthopleura asiatica* (Uchida), The, 202
PRIEUR, C., see R. Bagnis, 137
Prorocentrum concavum, 128
Prorocentrum lima, 128

R

Rapid enzyme immunoassay stick test, 144
Recent developments in the molecular structure of ciguatoxin, 122
Reproductive behaviors, 155
Resource partitioning, 324
Response of green hydra to light, 46
Rocky intertidal shores, 307
RUPPERT, EDWARD E., see Peter R. Smith, 315

S

SAFRANEK, LOUIS, AND CARROLL M. WILLIAMS, Studies of the ecdysiotropic activity of juvenile hormone in pupae of the hormone tobacco hornworm, *Manduca sexta,* 299
Sand crab egg production, 225
SCHEUER, PAUL J., see Kazuo Tachibana, 122
Scleractinia, 161
Sea anemone, 178, 202, 246
Sea star, 357
Sea star trypsin inhibitor, 357
Second symposium on regulatory actions of growth factors in reproduction and early development, 266
SEINO, NAOKO, see T. Yasumoto, 128
SEKIGUCHI, KOICHI, see J-I. Miyazaki, 212
Sexual reproduction and colony growth in the scleractinian coral *Porites astreoides,* 161
SHIRAI, L. K., see Y. Hokama, 144
SHOFFNER, JULIE, see A. M. Wenner, 225
Size effects on reproduction and growth, 161
SMITH, AMOS B., III, see Richard A. Gleeson, 1
SMITH, PETER R., EDWARD E. RUPPERT, AND STEPHEN L. GARDINER, A deuterostome-like nephridium in the mitraria larva of *Owenia fusiformis* (Polychaeta, Annelida), 315
Snail locomotion after CNS lesions, 83
Snail, blood-sucking, 362
SNYDER, KEITH, AND STACIA MOFFETT, Loss and recovery of locomotor behavior after CNS lesions in the snail *Melampus bidentatus,* 83
Squid, 61
STEEN, R. GRANT, AND L. MUSCATINE, Low temperature evokes rapid exocytosis of symbiotic algae by a sea anemone, 246
Stick enzyme immunoassay for CTX, 144
STRATHMANN, RICHARD R., see Larry R. McEdward, 30
Studies of the ecdysiotropic activity of juvenile hormone in pupae of the tobacco hornworm, *Manduca sexta,* 299
Study of production and toxicity of cultured *Gambierdiscus toxicus,* 108
Suspension feeding, 30
Swimming, 61
Systematic study of horseshoe crabs, 212

T

TACHIBANA, KAZUO, MANABU NUKINA, YONG-GOE JOH, AND PAUL J. SCHEUER, Recent developments in the molecular structure of ciguatoxin, 122
Tapeworm, 337
TELFORD, MALCOLM, RICH MOOI, AND ANTONY S. HAROLD, Feeding activities of two species of *Clypeaster* (Echinoides, Clypeasteroida): further evidence of clypeasteroid resource partitioning, 324
Temperature effects, 187

Tobacco hornworm, see *Manduca sexta*, 299
Torpedo californica AYRES, 362
Toxin production, 108
Toxins produced by benthic dinoflagellates, 128
Transport, 337
Tropical plankton, 284
Trypsin inhibitor from the coelomic fluid of the sea star *Asterias forbesi*, A, 357
Trypsin, 357
Two-dimensional electrophoresis, 212

U

Ultrastructure, 315
Use of the mosquito bioassay for determining the toxicity to man of ciguateric fish, The, 137

V

VOGEL, STEVEN, Flow-assisted mantle cavity refilling in jetting squid, 61

W

WENNER, ADRIAN M., DAVID M. HUBBARD, JENIFER DUGAN, JULIE SCHOFFNER, AND KERRY JELLISON, Egg production by sand crabs (*Emerita analoga*) as a function of size and year class (Decapoda, Hippidae), 225
WILLIAMS, CARROLL M., see Louis Safranek, 299

Y

YASUMOTO, TAKESHI, NAOKO SEINO, YASUTAKA MURAKAMI, AND MICHIO MURATA, Toxins produced by benthic dinoflagellates, 128
Year classes, 225

Z

ZIMMER-FAUST, RICHARD K., Crustacean chemical perception: towards a theory on optimal chemoreception, 10
Zinc, 69
Zooxanthellae, 246